Abstracts

A 60-channel superconductive input multiplexer integrated with pulse-tube cryocoolers

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This paper presents the measured results of a C-band 60-channel superconductive input multiplexer integrated with pulse-tube space-qualified cryocoolers. The multiplexer is developed to duplicate the requirements of the INTELSAT 8 program. The channel filters are self-equalized ten-pole high-temperature superconductor (HTS) planar structures designed with drop-in cryogenic ferrite circulators and isolators. This paper presents details on RF design, packaging, and cryocooler integration, as well as an assessment of overall reliability of using HTS equipment in a space environment. This paper demonstrates that at least 50% reduction in mass and 65% reduction in size can be achieved by replacing the INTELSAT 8 C-band dielectric-resonator input multiplexer with a superconductive multiplexer.

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